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TWO NEW AMERICAN SPECIES OF CYNOMYIA,—A STUDY IN CHÆTOTAXY.

By GARRY DE N. HOUGH, M.D.

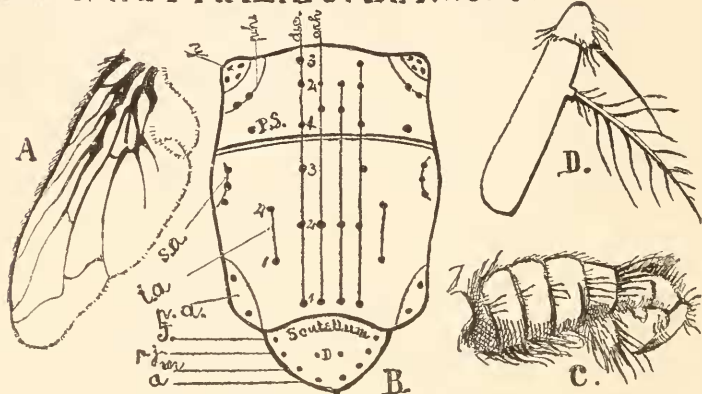
Cynomyia americana nov. sp.—Length seven to thirteen millimeters. Thorax blackish blue, opaque, with six faint whitish pollinose cephalo-caudal stripes (two achrostical, two dorso-central and two humeral) best seen with very oblique illumination. Abdomen dark metallic-green to violet, often a brilliant metallic-violet, frontal vitta brown to black: genovertical plates (sides of the front) and genæ (that part of the side of the face which is dorsad the transverse impression of the face and ventrad the insertion of the antennæ) of silky lustre, their color varying, according to the incidence of the light, from a rich brown to a shining brownish yellow; buccæ (that part of the side of the face and head which is ventrad the transverse impression of the face and ventrad the eye) black, except the anterior half, which varies, according to the incidence of the light, from black to a ferruginous red; antennæ black to brown, with base of third joint and apex of second yellowish red to yellow; palpi reddish yellow. Abdomen of male hairy, as in the European *Cynomyia mortuorum* L., the prominent hypopygium very densely beset with soft black hair, the two terminal chitinous hooks often quite prominent. Wing, antenna and chætotaxy shown on plate; tegulæ white to pale brown. Legs black, anterior and posterior thighs have their lateral surfaces quite thickly clothed with long, fine, black hairs.

I have 244 specimens, male and female. This species has a very wide distribution, my specimens being from Canada, Massa-

chusetts, Pennsylvania, Georgia, Louisiana, Indiana, Colorado, S. Dakota and Illinois. It is found mostly in early Spring and late Fall. The larva feeds on putrefying animal matter.

I have four specimens of a *Cynomyia* from Greenland which I refer, with a doubt, to this species. They are imperfect, but seem, on the whole, a little more like *C. mortuorum* than *americana*; possibly they represent a new species. The following points clearly distinguish this species from *C. mortuorum*: The face of *americana* is brownish yellow, that of *mortuorum* golden-yellow, and in the latter the yellow color extends much further caudad on the bucca, viz., to or beyond the caudal border of the

CYNOMYIA AMERICANA. NOV. SP.

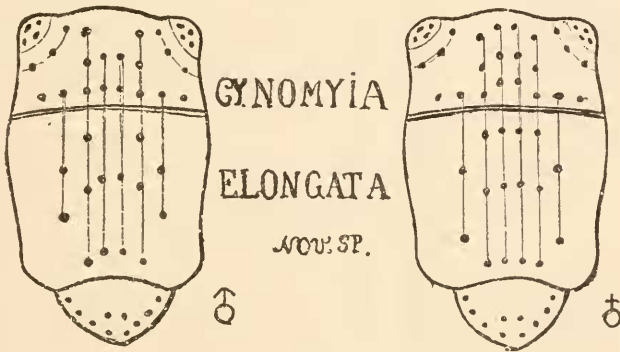


eye. The antennæ of *americana* are darker in color than those of *mortuorum*. The occipital hair (nearly the whole occiput of *Cynomyiæ* is beset thickly with soft hair and not with regularly arranged bristles) is white in *americana*, yellow in *mortuorum*. The hypopygium and its terminal hooks are of moderate size in *americana*, very large in *mortuorum*, and on this account the abdomen of *mortuorum* seems more elongate. The normal chaetotaxy is identical, except that *americana* has two posterior achrostical macrochætæ, *mortuorum* but one.

***Cynomyia elongata* nov. sp.**—Length twelve to fourteen millimeters. Resembles *americana* so much that I shall limit my description mainly to pointing out the differences between the two. Front of male one-fourth the width of the head, in *americana* one-fifth. According to the incidence of the light the color of the frontal vitta varies from dark brown to

golden-yellow, that of the geno-vertical plates from light brown to golden-yellow, and that of the genæ from reddish brown to golden-yellow; buccæ black (anterior half golden-yellow in some lights), their beard black; the antenna has the second joint and the base of the third yellowish red, almost of an orange color, the rest of the third has a light brown ground color in the male (darker in the female) and the whole of the third is thickly white pollinose. In the male the third antennal joint is decidedly more slender than in *americana*. The thorax is rather longer in proportion to its width than in *americana*; its chætotaxy is alike in the two species, except that *elongata* has a small anterior intra-alar macrochæta and both my female specimens have three anterior and three posterior achrostical macrochætæ (each of my males has two anterior achrosticals; one has one, the other two posterior achrosticals). The abdomen in all my specimens is green and has a slight, but distinct white pollinose coating, much more than I have ever observed in *americana*; its hairs are coarser and less numerous, and the lateral macrochætæ more appressed than in *americana*; each abdominal segment is longer in proportion to its width than in *americana*. The hypopygium is less densely hairy than in *americana*, but its terminal hooks are of about the same size as in that species (far smaller than in *mortuorum*). The long hair on the outer surface of the fore and hind thighs is shorter and less dense than in *americana*.

Two males and two females. One of the males and one of the females are mounted on the same pin, whence I infer that they



were taken in copula; their locality label says So. Dakota, Sep. 19th; I received them from Prof. J. M. Aldrich. One female (also from Prof. Aldrich) bears label, Brookings, So. Dakota. One male, from Prof. W. M. Wheeler, is labeled Torrey's Lake, Wyoming.

While most dipterists are aware that individual variations in chætotaxy occur, I do not think that any observations have been

published showing the frequency and character of these variations. In my 244 specimens of *Cynomyia americana* 44, or 18 per cent, show some variation. The variation is of three kinds: 1, deficiency in size of a macrochæta; 2, absence of a macrochæta normally present; 3, presence of a macrochæta normally absent. Two individuals show both the second and third kinds of variations, no others had more than one abnormality. Leaving out these two we find that in the remaining 42 the abnormality was unilateral in 23, bilateral in 19. When bilateral the corresponding macrochætæ on the two sides of the body were always the ones concerned.

There were eleven specimens in which there seemed to me to be a deficiency in the size of a macrochæta. The third anterior dorso-central was always the one affected. In one male the abnormality was on the right side; in four males and one female on the left side; in one male and four females on both sides. Five of the specimens were unusually small: male 7 mm., male 7.5 mm., female 8 mm., male 9 mm. and male 9 mm. This macrochæta is always the smallest of the dorso-centrals. The amount of variation from the normal size differed much in the different individuals and in some cases seemed to be compensated for by the increased size of a macrochæta on the cephalic surface of the thorax which is nearly or quite in the line of the dorso-centrals. Similar variation in the size of the third anterior dorso-central occurs in the genera *Calliphora* and *Lucilia*.

Absence of a macrochæta normally present occurred in twelve individuals (4.9 per cent). Of course, it is possible that in some cases the macrochæta had been originally present and had been broken off, but I was unable, with a magnifying power of twenty diameters, to discover any indication that it had ever been present. Two specimens which showed the presence of macrochætæ normally absent as well as the absence of macrochætæ normally present will be separately considered. The other cases that fall under the present head were as follows:

- Third anterior dorso-central absent; one male and two females.
- First left anterior dorso-central absent; one female.
- Second right posterior achrostical absent; one male.
- Second left posterior achrostical absent; two males.
- Second pair posterior achrostical absent; three males.

The occasional absence of the third anterior dorso-central or, to put it in other words, its reduction to such a size as to make it indistinguishable from the other hairs of that region, would be expected by one who had studied the eleven specimens of the first group wherein there was a deficiency in the size of this macrochæta. In regard to the absence of one or both of the second posterior achrosticals I would say that throughout the Muscidae (sens. strict.) I have found that the number of pairs of achrostical macrochætæ is usually a specific character, although sometimes variable, and that in *Cynomyia mortuorum* (as far as my limited amount of material enables me to determine) there is but one pair.

Presence of macrochætæ normally absent was observed in twenty-three cases (9.4 per cent), two of which showed also absence of macrochætæ normally present and will be separately considered. The abnormalities observed in this group were :

A third right anterior achrostical present; one male and one female.

A third left anterior achrostical present ; one female.

A third right posterior achrostical present; two males and one female.

A third left posterior achrostical present; one female.

A third pair of posterior achrostical present; one female.

A small pair of anterior intra-alar, right one half the size of the left; three females.

A third left posterior intra-alar, about a quarter as large as the second; two females.

A third pair of posterior intra-alars; two males and two females.

A second left marginal scutellar ; one male and one female.

A second left discal scutellar; two females.

The presence of a third anterior achrostical on one or both sides I have also observed in the typical *Calliphoræ*, and it is present in both my female specimens of *Cynomyia elongata*. The third pair of posterior achrosticals occurs in my females of *Cyn. elongata*, and is always present in the typical *Calliphoræ*. The anterior intra-alar is present in all my specimens of *Cyn. elongata* and in all the *Calliphoræ* and nearly related genera. The third posterior intra alar is normal in an undescribed species of *Calliphora*, of which I have numerous specimens, and is occasionally

present in *Calliphora vomitoria* and *erythrocephala*. Two marginal scutellar macrochaetae are normally present in *Calliphora* and some related genera. Two discal scutellar are occasionally seen (as an abnormality) in *Calliphora* and many other Muscidae (sens. strict.)

Two individuals, out of the 244, presented both absence of normal and presence of abnormal macrochaetae. These were :

A female with a third pair of anterior achrosticals whose second left posterior achrostical was absent. She had, however, a very small achrostical on the left side in the position occupied by the third posterior achrostical when that is present.

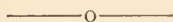
In one male the left apical scutellar was absent. The left marginal did not have its usual direction, but that of the absent apical. There were three left and two right discal scutellar instead of the normal one left and one right. One of the left was much the largest and seemed, like the marginal, to be trying by its direction to make up for the absent apical. This was the only specimen in which any macrochaeta had other than its normal direction.

Omitting this monstrosity from further consideration I would submit the following conclusions :

1. In *Cynomyia americana* there is very little variation in the size or number of the macrochaetae of the thorax and scutellum.
2. Variations in size affect only the third anterior dorso-central.
3. It is very rare for any macrochaeta normally present to be absent, except the third anterior dorso-central and the second posterior achrostical.
4. When a macrochaeta, normally absent, is present we find that it is, in eleven individuals out of twenty-two, one that is normally present in all the typical species of *Calliphora*; that in six other individuals it is one which is normally present in one species of *Calliphora* and occurs occasionally in others; that in the other five individuals it is an abnormality, which is also found in various species of *Calliphora*.
5. The presence in three females of an anterior intra-alar is of especial interest, because it is present in all my specimens of *Cyn. elongata* (although in them rather a small macrochaeta) and because it is always present, as far as my knowledge extends, in *Calliphora* and the genera closely related thereto.
6. The females of *Cyn. elongata* have, like all the typical Calliphoræ, three posterior achrosticals.

7. All the *Cynomyia* have the lateral post-humeral macrochæta laterad the presutural macrochæta, as do also *Calliphora* and all its near relatives. The American, like the European species of *Cynomyia*, agree with *Calliphora*, too, in having the lower tegulæ hairy.

8. From all the above I conclude, with Girschner, that from the standpoint of chætotaxy, *Cynomyia* belongs to the Muscidae (sens. strict.) being more closely related to *Calliphora*, *Lucilia*, etc., than to *Sarcophaga*.



Fourth Addition to the list of Dragonflies (Odonata) of Manchester, Kennebec County, Maine.

By MISS MATTIE WADSWORTH.

(See ENT. NEWS, vol. i, pp. 36, 55; vol. ii, p. 11; vol. iii, p. 8; vol. v, p. 132.)

No. 10*b*. *Lestes vigilax* Hag.

1895, July 1, one ♂ on marsh.

No. 10*c*. *Lestes inequalis* Walsh.

1897, June 29, one ♂ on marsh.

No. 10*d*. *Lestes congener* Hag.

1891, July 20, one ♂ over Snake Pond.

No. 25. *Somatochlora walshii* Scud.

The ♀ of this species has not previously been recorded from this locality.

1897, June 24, one ♀ near woods. Four males also taken since my last report:—1895, June 20, two males over marsh; 1897, July 6, 12, one each day over marsh.

No. 25*a*. *Somatochlora linearis* Hag. (probably)

1897, July 27, one ♀ over marsh.

No. 30*b*. *Neurocordulia obsoleta* Say.

1897, July 5, one ♂ in pasture near woods.

All new species were identified by Mr. P. P. Calvert.

Sixty-two species and an undetermined *Enallagma* have now been taken in this locality, all within a radius of two miles, and all by myself. The season of 1897 brought an abundance of dragonflies and great obstacles to their capture, as all marshes were covered with water until August, and all other hunting grounds were very wet and muddy. Notwithstanding these difficulties fifty species were captured, the largest number recorded in one season.